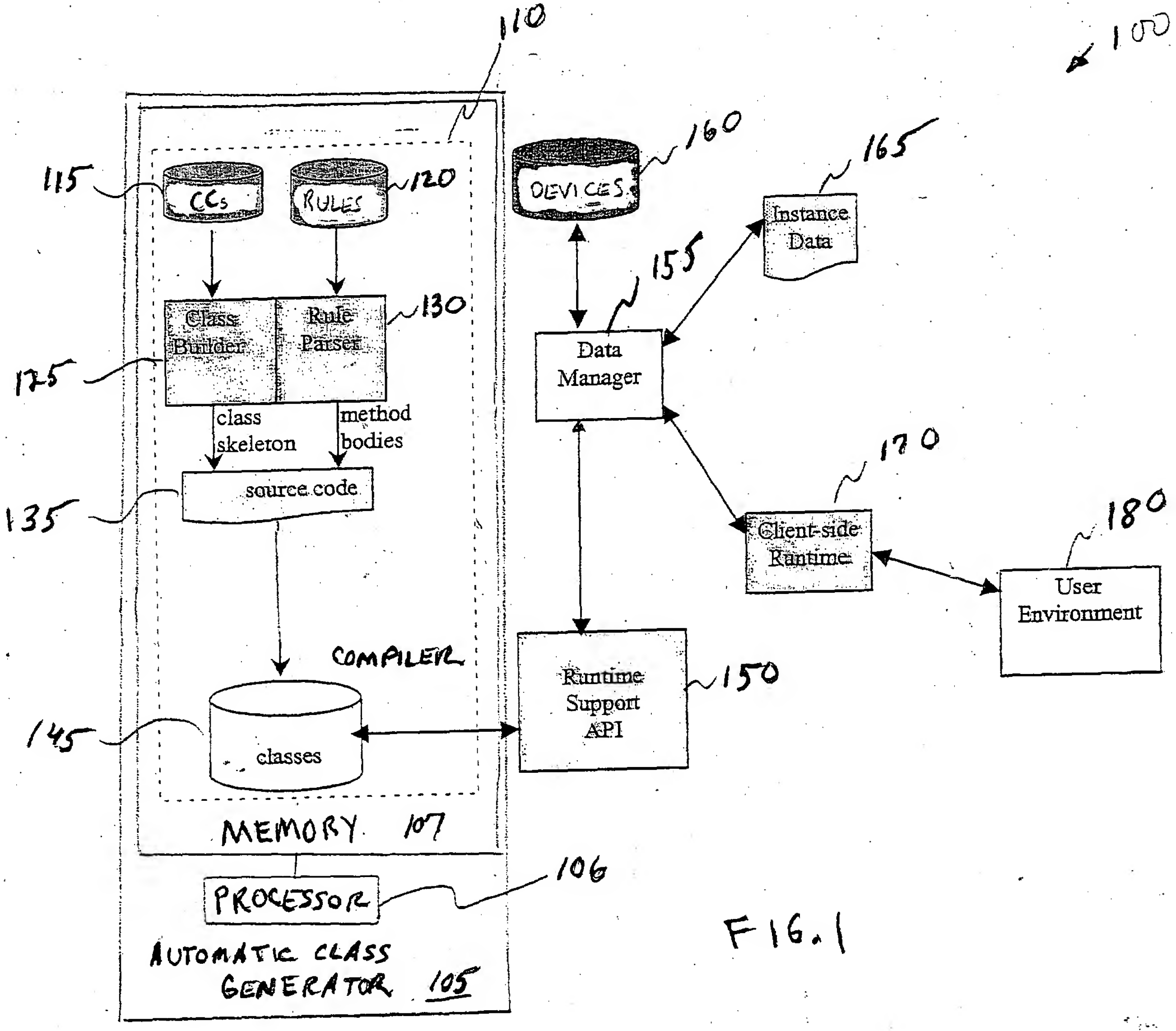

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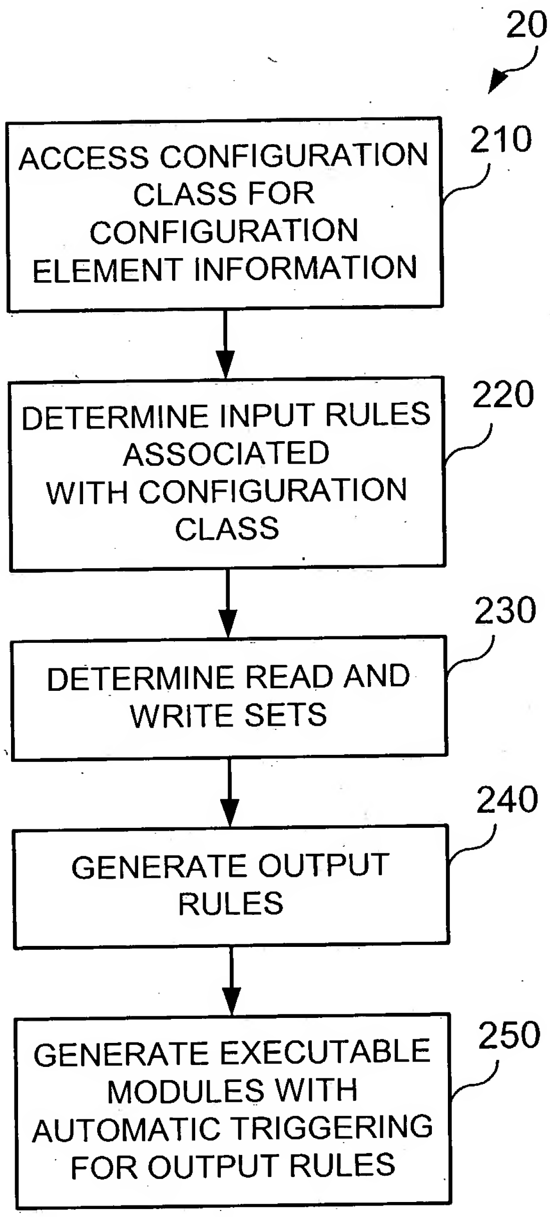
FIG. 1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230
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240
GENERATE EXECUTABLE MODULES WITH AUTOMATIC TRIGGERING FOR OUTPUT RULES
250

FIG. 2

```
<MOC className="SiteData" MOCVersion="1.0">
  <MOCElement name="serverID">
     <Type>
        <Int32 minValue="1" maxValue="100"/>
      </Type>
  </MOCElement>
  <MOCElement name="serverName">
       <Type>
         <String defaultValue=""/>
       </Type>
  </MOCElement>
  <MOCElement name="serverType">
      <Type>
         <EnumRef name="ServerTypeEnum"/>
      </Type>
  </MOCElement>
  <MOCElement name="serverAttr">
       <Type>
          <Attributes className="ServerComplexType" MOCVersion="1.0"/>
       </Type>
   </MOCElement>
</MOC>
```

FIG. 3

```
<Typedef name="PnniAtmAddr"> <!-- a predefined type -->
  <Type>
    <OctetString maxLength="20" minLength="0" />
  </Type>
</Typedef>
<!-- A type defined in terms of another type -->
<Typedef name="ArrayedAtmAddr">
  <Type arrayLength="10">
    <UserDefType name="PnniAtmAddr"/> <!-- type defined above -->
  </Type>
</Typedef>

<!-- this is inside a MDC that uses the above type definition -->
<MOCElement name="atmAddress" visibilty="public">
   <Type arrayLength="25">
<UserDefType name="ArrayedAtmAddr"/>
   </Type>
</MOCElement>
```

FIG. 4

```
<MOC className="SiteData">
   <ExplicitRule name="iEMS_defaultValueRule"><![CDATA[
     public void iEMS_defaultValueRule()
     {
       serverID = 100;
       serverName = "HCFS1";
       serverType = D_serverType_hcf;
...
     }]]>
   </ExplicitRule>
    <MOCElement name="serverName">
        <ImplicitRule name="iEMS_validationRule"><![CDATA[
            public void iEMS_validationRule()
            {
             // details of this rule are shown later.
            }]]>
         </ImplicitRule>
     </MOCElement>
   ...
 </MOC>
```

FIG. 5

```
public class SiteData_1_0 {
  public int serverType;
  public int serverID;
  public ServerComplexType_1_0 serverAttr =  new ServerComplexType_1_0(this, "serverAttr");
  public String serverName;
  ...
 }
```

FIG.6

```
public class SiteData_1_0  //the 1_0 is the version
{
 ...
 public String serverName_get() {
   return this.serverName;
 }
 public int serverType_get() {
   return this.serverType;
 }
 public ServerComplexType_1_0 serverAttr_get() {
   return this.serverAttr;
 }
 public int serverID_get() {
   return this.serverID;
 }
 ...
}
```

FIG.7

```
public class SiteData_1_0
{
 ...
 public void serverAttr_set(ServerComplexType_1_0 v) throws Exception {
   this.serverAttr = v;
   addToUpdateList("serverAttr", v, null);
 }
 public void serverName_set(String v) throws Exception {
   this.serverName = v;
   addToUpdateList("serverName", v, null);
 }
 ...
}
```

FIG. 8

```
public class SiteData_1_0
{
  ...
  public void serverName_update(String v)  throws Exception {
   this.serverName = v;
   addToUpdateList("serverName", v, null);
  }

  public void serverAttr_update(ServerComplexType_1_0 v)  throws Exception {
   this.serverAttr = v;
   addToUpdateList("serverAttr", v, null);
  }
  ...
}
```

FIG. 9

```
<MOCElement name="serverName">
  <ImplicitRule name="iEMS_validationRule"><![CDATA[
     public void iEMS_validationRule()
     {
      if(serverID < 1 || serverID > 250)
          throw new RuntimeException("serverID length error");
      if(serverType != D_serverType_hcf)
          throw new RuntimeException("serverType error");
     }
    ]]>
   </ImplicitRule>
</MOCElement>
```

FIG. 7D

```
public void serverType_set(int v) throws Exception {
    //validate range -- omitted for space
    this.serverType = v;
    addToUpdateList("serverType", new Integer(v), null);
    addTrigger(this, "serverName_iEMS_validationRule");
}
public void serverID_set(int v) throws Exception {
    //validate range -- omitted for space
    this.serverID = v;
    addToUpdateList("serverID", new Integer(v), null);
    serverID_iEMS_modificationRule();
    addTrigger(this, "serverName_iEMS_validationRule");
  }
```

1110

```
public void serverType_update(int v) throws Exception {
    //validate range -- omitted for space
    this.serverType = v;
    addToUpdateList("serverType", new Integer(v), null);
    serverName_iEMS_validationRule();
}
public void serverID_update(int v) throws Exception {
    //validate range -- omitted for space
    this.serverID = v;
    addToUpdateList("serverID", new Integer(v), null);
    serverName_iEMS_validationRule();
  }
```

1120

FIG. 11

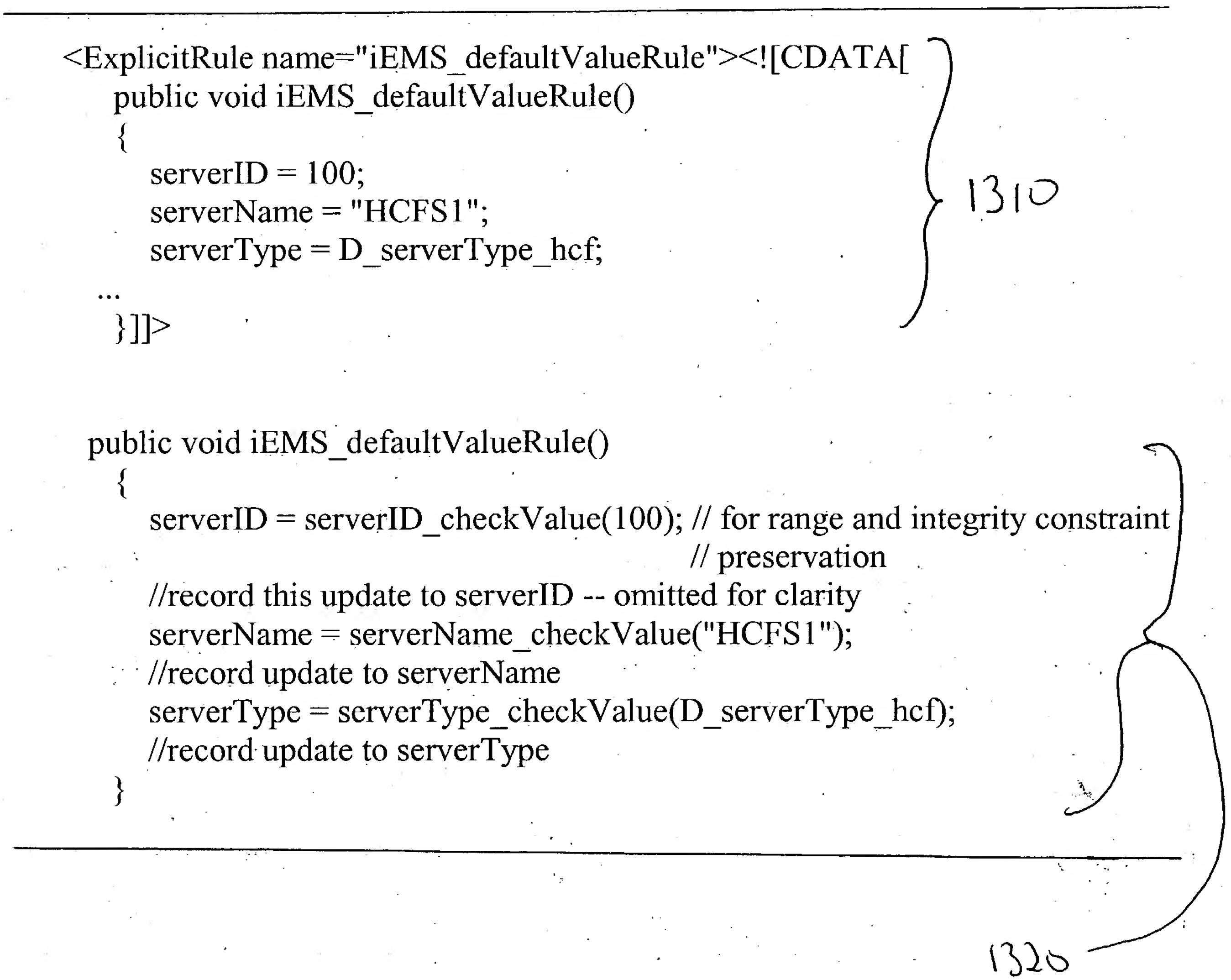
```
  <MOCElement name="serverID">
   <ExplicitRule name="iEMS_modificationRule"><![CDATA[
        public void iEMS_modificationRule() throws IEMSException {
           try{    // dummy modification rules
                if(serverID == 3)
                      serverName_set("Three");
                if(serverID == 4)
                      serverName_set("Four");
              }
           catch(Throwable t){
               throw new IEMSException(t);
           }
        }
 ]]>
  </ExplicitRule>
</MOCElement>
```

1210

```
public NameValuePair[] triggerAlliEMS_modificationRule() throws Exception {
   NameValuePair[] values = new NameValuePair[1];
   serverID_iEMS_modificationRule();
   values[0] = new NameValuePair("serverID_iEMS_modificationRule", null);
   return values;
 }
```

1220

FIG. 12



```
<ExplicitRule name="iEMS_defaultValueRule"><![CDATA[
    public void iEMS_defaultValueRule()
    {
        serverID = 100;
        serverName = "HCFS1";
        serverType = D_serverType_hcf;
  ...
    }]]>


  public void iEMS_defaultValueRule()
    {
        serverID = serverID_checkValue(100); // for range and integrity constraint
                                              // preservation
        //record this update to serverID -- omitted for clarity
        serverName = serverName_checkValue("HCFS1");
        //record update to serverName
        serverType = serverType_checkValue(D_serverType_hcf);
        //record update to serverType
    }
```

FIG.13